

APPENDIX "A"

LIST OF ABBREVIATIONS

The following list of abbreviations is for use in these Standard specifications and the Approved Plans:

ABBREVIATION	TERMS
A	Ampere/Area
AA	Aluminum Association
AASHTO	American Association of State Highway and Transportation Officials
AB	Anchor Bolt/Aggregate Base
ABAN	Abandoned
ABC	Asphalt Base Course
AC	Acre/Asphalt Concrete/Alternating Current
ACI	American Concrete Institute
ACP	Asbestos-Cement Pipe
ACU	Access Door
AE	Architect-Engineer
AFF	Above Finished Floor
AGG	Aggregate
AH	Access Hole
AI	The Asphalt Institute
AIA	American Institute of Architects
AISC	American Institute of Steel Construction, Inc.
AISI	American Iron and Steel Institute
AL	Aluminum
AMB	Ambient
AMP	Ampere
ANG	Angle
ANSI	American National Standards Institute
APA	American Plywood Association
API	American Petroleum Institute
APWA	American Public Works Association
ARCH	Architecture/Architectural
ARV	Air-Release Valve
ARVV	Air-Release and Vacuum Valve
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigeration and Air-Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASPH	Asphalt
ASSY	Assembly
ASTM	American Society for Testing and Materials
ATS	Automatic Transfer Switch
AVA	Air Vacuum Valve Assembly
AVE	Avenue
AVG	Average
AWG	American Wire Gage
AWS	American Welding Society
AWWA	American Water Works Association

ABBREVIATION	TERMS
BB	Back-to-Back
BC	Beginning of Curve/Back of Curb/Bare Copper
BEG	Begin
BETW	Between
BF	Blind Flange
BHP	Brake Horsepower
BK	Back/Brake
BKR	Breaker
BL	Building
BLK	Block
BM	Bench Mark/Beam
BO	Blowoff
BOP	Bottom of Page
BOT	Bottom
BP	Baseplate
BRG	Bearing
BRNZ	Bronze
BTN	Button
BTU	British Thermal Unit
BUR CBL	Buried Cable
BV	Butterfly Valve
BW	Block Wall
C	Conduit/Celsius/Civil Drawings
CAB	Crushed Aggregate Base
CAP	Capacity
CB	Catch Basin/Circuit Breaker
CC	Cooling Coil
C-C	Center-to-Center
CCB	Concrete Block
CD	Cross Drain/Condensate Drain/Ceiling Diffuser
CEM	Cement
CF	Cubic Feet/Curb Face
CFH	Cubic Feet Per Hour
CFM	Cubic Feet Per Minute
CFS	Cubic Feet Per Second
CG	Construction Grade
C&G	Curb and Gutter
CHG	Change
CHKD PL	Checkered Plate
CI	Cast Iron
CIP	Cast In Place/Cast-Iron Pipe
CISP	Cast Iron Soil Pipe
CISPI	Cast-Iron Soil Pipe Institute
CJ	Construction Joint
CL	Centerline/Class/Clearance/Chlorine
CLR	Clear
CMLC	Cement-Mortar Lined & Coated
CML	Cement-Mortar Lined

ABBREVIATION	TERMS
CMP	Corrugated Metal Pipe
CMPA	Corrugated Metal Pipe Arch
CMU	Concrete Masonry Unit
CO	Cleanout/Conduit Only
COL	Column
COMM	Communication
COMP	Composite
COMPL	Complete
CONC	Concrete
CONN	Connection
CONST	Construct or Construction
CONT	Continuous
CONTR	Contractor
COORD	Coordinate/Coordinated
COP	Copper
COR	Corner
CORP	Corporation
CP	Cathodic Protection
CPLG	Coupling
CRSI	Concrete Reinforcing Steel Institute
CS	Commercial Standard, US Department of Commerce
CT	Center Top/Current Transformer
CTG	Coating
CTR	Center
CULV	Culvert
CU YD, CY	Cubic Yard
CYL	Cylinder
D	Degree of Curvature
DB	Direct Buried/Decibel
DBL	Double
DC	Direct Current
DEPT	Department
DET	Detail/Detour
DG	Decomposed Granite
DI	Drop Inlet
DIA	Diameter
DIAG	Diagonal
DIM	Dimension
DIMJ	Ductile-Iron Mechanical Joint
DIP	Ductile-Iron Pipe
DIPRA	Ductile-Iron Pipe Research Association
DISCH	Discharge
DIST	Distance
DMH	Drop Manhole
DN	Down
DR	Drain/Door
DSL	Diesel
DWG	Drawing
DWY	Driveway

ABBREVIATION**TERMS**

E	East/Electrical Drawing
EA	Each
EC	End of Curve
ECC	Eccentric
ED	External Distance
EE	Each End
EF	Each Face/Exhaust Fan
EFF	Efficiency
EFL	Effluent
EGL	Energy Grade Line
EL	Elevation/Each Layer
E/L	Easement Line
ELEC	Electric
ELP	Elliptical
ENC	Encasement or Encased
ENCL	Enclosure
ENG	Engine
ENGR	Engineer
EOS	Equivalent Opening Size
EP	Edge of Pavement/Explosion Proof
EPA	Environmental Protection Agency (Federal)
EQ	Equation
EQL	Equal
ESMT	Easement
EST	Estimate or Estimated
ETC	And So Forth
EW	Each Way
EXC	Excavate or Excavation
EXP	Expansion
EXST	Existing
EXT	Exterior/Extension
F	Fahrenheit/Floor
FAB	Fabricate
FBRBD	Fiberboard
FC	Foot-Candle
FCO	Floor Cleanout
FCV	Flow Control Valve
FD	Floor Drain
FDN	Foundation
FE	Flanged End
Fed Spec	Federal Specification
FF	Finished Floor/Flat Face
FG	Finished Grade
FHY	Fire Hydrant
F&I	Furnish and Install
FIG	Figure
FIP	Female Iron Pipe thread
FIT	Fitting

ABBREVIATION	TERMS
FL	Floor/Flow Line
FLG	Flange
FM	Force Main/Factory Mutual
FMH	Flexible Metal Hose
FNSH	Finish
FOC	Face of Concrete
FPC	Flexible Pipe Coupling
FPM	Feet Per Minute
FPS	Feet Per Second
FS	Finished Surface/Floor Sink/Federal Specifications
FSTNR	Fastener
FT	Feet
FTG	Footing
FUT	Future
G	Gas/General Drawings
GA	Gage
GAL	Gallon
GALV	Galvanized
GB	Grade Break
GDR	Guard Rail
GR	Grooved End
GENL	General
GFI	Ground Fault Interrupter
GM	Gas Main
GND	Ground
GPD	Gallons Per Day
GPM	Gallons Per Minute
GR	Grade
GSKT	Gasket
GUT	Gutter
GV	Gate Valve
H	Humidistat/Horizontal
HARN	Harness
HB	Hose Bib
HD	Heavy Duty
HDPE	High-Density Polyethylene Pipe
HGL	Hydraulic Grade Line
HGT	Height
HMWPE	High-Molecular Weight Polyethylene
HORIZ	Horizontal
HP	Horsepower/High Pressure
HPT	High Point
HR	Hour/Handrail
HS	High Strength
HV	Hose Valve
HVAC	Heating, Ventilating and Air Conditioning
HW	Headwall/Hot Water
HWD	Helix Water District
HWL	High Water Level
HWY	Highway
HYDR	Hydraulic
HZ	Hertz (cycles per second)

ABBREVIATION**TERMS**

I	Intersection Angle/Instrumentation Drawings
ICBO	International Conference of Building Officials
ID	Inside Diameter
IE	Invert Elevation
IN	Inches
INCL	Include
INL	Inlet
INSUL	Insulating
INSTL	Install or Installation
INTR	Interior/Intersection
INV	Invert
I/O	Inlet/Outlet
IP	Iron Pipe
IPS	Iron Pipe Size
IPT	Iron Pipe thread
IRR	Irrigation
JB	Junction Box
JCT	Junction
JN	Join
JT	Joint
KG	Kilogram
KM	Kilometer
KIPS	Thousands of Pounds
KV	Kilovolt
KW	Kilowatt
KWH	Kilowatt-Hour
KWHM	Kilowatt-Hour Meter
L	Length of Curve/Long/Landscaping Drawings
LATL	Lateral
LB	Pound
LCL	Local
LCWD	Leucadia County Water District
LF	Linear Foot
LNDSCP	Landscaping
LOCN	Location
LP	Light Pole
LPT	Low Point
LR	Long Radius
LS	Lift Station
LT	Left/Light
LWC	Lightweight Concrete
LWIC	Lightweight Insulating Concrete
LWL	Low Water Level

ABBREVIATION	TERMS
M	Mechanical Drawings
MATL	Material
MAX	Maximum
MB	Machine Bolt/Megabyte/Millibars
MC	Metal Channel
MCM	Thousand Circular Mils
MECH	Mechanical
MFR	Manufacturer
MG	Million Gallons/Milligram
MGD	Million Gallons Per Day
MH	Manhole
MHZ	Megahertz
MI	Malleable Iron/Mile
MIL	Military Specifications
MIL-	Military Specification (leading symbol)
MIN	Minimum
MIP	Male Iron Pipe thread
MISC	Miscellaneous
MJ	Mechanical Joint
MO	Motor Operator/Motor Operated/Masonry Opening
MOD	Modification
MON	Monument
MOT	Motor
MSDS	Material Safety Data Sheet
MSL	Mean Sea Level
MTD	Mounted
N	North/Neutral/Nitrogen
NA	Not Applicable
NACE	National Association of Corrosion Engineers
NBS	National Bureau of Standards
N & C	Nail and Cap
NC	Normally Closed
NE	Northeast
NEC	National Electrical Code
NEMA	National Electrical Manufacturers Association
NFC	National Fire Code
NFPA	National Fire Protection Association
NIC	Not in Contract
NIP	Nipple
NO	Number/Normally Open
NOM	Nominal
NPT	National Pipe Taper
NRS	Non-Rising Stem
NSF	National Sanitation Foundation
NTS	Not to Scale
NW	Northwest
NWL	Normal Water Level

ABBREVIATION	TERMS
OA	Overall/Outside Air
OC	On Center/Overcurrent
OD	Outside Diameter
OE	Or Equal
OF	Outside Face
OFCI	Owner-furnished Contractor-Installed
OFCR	Owner-furnished Contractor-Relocated
OMWD	Olivenhain Municipal Water District
OPER	Operator
OPNG	Opening
OPP	Opposite
OSHA	Occupational Safety and Health Administration, US Department of Labor, as defined in the General Conditions
O TO O	Out to Out
OUTL	Outlet
OVFL	Overflow
OVHD	Overhead
P	Pole
PARA	Paragraph
PB	Push button/Pull Box
PC	Point of Curvature/Programmable Controller
PCA	Portland Cement Association
PCC	Point of compound curvature/Portland Cement Concrete
PE	Plain End/Polyethylene/Professional Engineer
PEN	Penetration
PG	Pressure Gage
PI	Point of Intersection
PJTN	Projection
PKWY	Parkway
PL	Plate/Property Line
PLATF	Platform
PLF	Pounds Per Lineal Foot
PNL	Panel
PO	Push-On
POB	Point of Beginning
POC	Point of Connection
POLYE	Polyethylene
POR	Portion
PP	Power Pole/Polypropylene
PPB	Parts Per Billion
PPM	Parts Per Million
PR	Pair
PRC	Point of Reverse Curve
PRESS	Pressure
PRL	Parallel
PRPSD	Proposed
PRVC	Point of Reverse Curve Vertical Curve
PSI	Pounds Per Square Inch

ABBREVIATION	TERMS
PSIG	Pounds Per Square Inch Gage
PSF	Pounds Per Square Foot
PT	Point of Tangency
PV	Plug Valve
PVC	Polyvinyl Chloride
PVMT	Pavement
PWR	Power
Q	Flow Rate
QTY	Quantity
R	Right/Radius
RAF	Return Air Fan
RC	Reinforced Concrete
RCP	Reinforced Concrete Pipe
RCPA	Reinforced Concrete Pipe Arch
RD	Road
RDC	Reduce
RDCR	Reducer
RDWY	Roadway
REF	Reference
REINF	Reinforce or Reinforced
RELOC	Relocate
REQD	Required
RES	Reservoir
REV	Revise/Revision
RF	Raised Face
RH	Relative Humidity
RJ	Restrained Joint
RND	Round
ROS	Record of Survey
ROW	Right-of-Way
RPM	Revolutions Per Minute
RST	Reinforcing Steel
RT	Right
RW	Recycled Water
RWGV	Resilient-Wedge Gate Valve
S	South/Sewer
SA	Sweetwater Authority
SAE	Society of Automotive Engineers
SAN	Sanitary
SC	Seal Coat
SCFM	Standard Cubic Feet Per Minute
SCHED	Schedule
SCRN	Screen
SD	Storm Drain
SD CO	San Diego County
SDG	Siding

ABBREVIATION	TERMS
SE	Southeast
SECT	Section
SF	Square Feet
SGL	Single
SH	Sheet/Sheeting/Shielded
SHT	sheet
SIM	Similar
SKWK	Sidewalk
SLP	Slope
SLV	Sleeve
SM	Sheet Metal
SOL	Solenoid
SOV	Solenoid-Operated Valve
SP	Space/Steel Pipe/Static Pressure/Spare
SPCG	Spacing
SPEC	Specification
SPLC	Splice
SPRT	Support
SQ	Square
SS	Sanitary Sewer/Stainless Steel
SSPC	Steel Structures Painting Council
SSPWC	Standard Specifications for Public Works Construction
ST	Street
STA	Station
STBY	Standby
STD	Standard
STK	Stake
STL	Steel
STR	Straight
STRL	Structural
STRUCT	Structure
STS	Storm Sewer
SURF	Surface
SW	Southwest
SWG	Swing
SYMM	Symmetrical
SYS	System
T	Ton/Tangent Length of Curve
TAN	Tangent
T/B	Top of Beam
TB	Thrust Block/Top of Bank/Terminal Board
T&B	Top and Bottom
TBG	tubing
TBM	Temporary Bench Mark
TC	Top of curb
TDH	Total Dynamic Head
TDS	Total Dissolved Solids
TEL	Telephone

ABBREVIATION	TERMS
TEMP	Temperature/Temporary
THD	Thread or threaded
THH	Thrust Harness
THK	Thick
TO	Turnout
T/O	Top of
TOC	Top of Concrete
TOP	Top of Pipe
TOS	Top of Slab
TOT	Total
TP	Telephone Pole
TRD	Thread
TRA	Tie Rod Assembly
TS	Tube Sheet
TYP	Typical
UBC	Uniform Building Code
UD	Underdrain
UG	Underground
UL	Underwriters Laboratories, Inc.
ULT	Ultimate
UON	Unless Otherwise Noted
UPC	Uniform Plumbing Code
UTC	Underground Telephone Cable
UTIL	Utilities
V	Vent/Valve/Volt/Vertical
VAC	Vacuum/Volts, Alternating Current
VC	Vertical Curve
VEL	Velocity
VERT	Vertical
VFD	Variable Frequency Drive
VID	Vista Irrigation District
VOL	Volume
VPC	Vertical Point of Curve
VPI	Vertical Point of Intersection
VPT	Vertical Point of Tangency
VWD	Vallecitos Water District
W	West/Watt/Wide/Water/Wire
W/	With
WAS	Water Agencies' Standards
WE	Weld End
WG	Water Gage
WL	Waterline
WLD	Welded
WM	Water Meter
W/O	Without
WP	Waterproof/Working Point

ABBREVIATION	TERMS
WSE	Water Surface Elevation
WSP	Water Stop
WT	Weight
WTR	Water
WWF	Welded Wire Fabric
WWM	Woven Wire Mesh

END OF APPENDIX "A"

APPENDIX "B"

DEFINITIONS

Wherever the following terms or pronouns occur in these Standard Specifications or in related documents, the intent and meaning shall be interpreted as follows:

- A. **"Approved Plans"** shall mean the official plans, profiles, typical cross-sections, working drawings, detail drawings, or exact reproductions thereof, approved by the District and other appropriate government agencies, which show the locations, character, dimensions, and details of the work required to construct the specified public improvements.
- B. **"Approved Materials List"** shall mean the listing of those materials reviewed, tested, and allowed for use by the District for installation of its facilities (which may include potable water, recycled water, and sewer facilities).
- C. **"Board"** shall mean the Board of Directors of the Carlsbad Municipal Water District.
- D. **"Contractor"** shall mean the independent person, firm, corporation or partnership with whom the District or Developer contracts for the performance of the work or any part thereof covered by the Approved Plans and these Standard Specifications. Instructions or information given by the District to the Contractor's superintendent or agent on the Project shall be considered as having been given to the Developer.
- E. **"Developer"** shall mean the independent person, firm, corporation or partnership whose purpose is the development of property. The Developer shall, at all times be represented on the Project in person or by a duly designated agent (Contractor or Private Engineer). Instructions or information given by the District to the Contractor's superintendent or agent on the Project shall be considered as having been given to the Developer.
- F. **"District"** shall mean Carlsbad Municipal Water District.

For the unique purpose of these Standard Specifications, District shall also refer to the District's representative(s) acting within the scope of the particular duties entrusted to them.

The District shall resolve any and all issues which may arise with regard to the quality or acceptability of approved materials furnished or work performed, to the manner of performance and rate of progress of the work and shall answer all questions relating to the interpretation of the Standard Drawings, the Approved Plans, the job specifications, if any, and these Standard Specifications as well as the acceptable fulfillment of the Contract on the part of the Developer.

- G. **"Engineer"** shall mean the City Engineer, or the Deputy City Engineer, acting either directly or through properly authorized agents, such agents acting severally within the scope of the particular duties entrusted to them.

- H. **"Inspector"** shall mean the District's authorized agent whose duties shall include those defined elsewhere within these Standard Specifications, but who shall not direct the work being performed.
- I. **"Engineer of Work"** or **"Private Engineer"** shall mean a Civil Engineer or Structural Engineer registered or licensed in California who is qualified to act as an agent of the Developer in preparing plans for facilities to be approved and accepted by the District and incorporated thereafter into the District's system.
- J. **"Project"** or the **"Work"** shall mean the public improvement to be constructed in whole or part within the boundaries of the District.
- K. **"Standard Drawings"** shall mean the standard details issued by the District for construction of District facilities (Volume 3).
- L. **"Specifications"** shall mean the directions, provisions, and requirements contained in the General Conditions, the Standard Specifications, and any supplements thereof.
- M. **"Submittal"** shall mean drawings, diagrams, illustrations, schedules, performance charts, reports, calculations, manuals, samples, brochures, and other data which are prepared by the Contractor or any subcontractor, manufacturer, supplier, or distributor and which illustrate some portion of the work.
- N. **"Plans"** shall mean the drawings which show the character and scope of the work to be performed and which have been prepared or approved by the Engineer and are referred to in the Contract Documents.

REFERENCE STANDARDS

The reference standards of the organizations form a part of these Specifications to the extent referenced and are referred to in the text by the basic designation only. Reference shall be made to the latest edition of said standards unless otherwise stated.

APPENDIX "C"

CARLSBAD MUNICIPAL WATER DISTRICT'S APPROVED MATERIALS LIST FOR USE ON CONSTRUCTION OF POTABLE AND RECYCLED WATER FACILITIES

Item	Description	Manufacturer/Model
AIR/VACUUM VALVE 1-INCH		APCO 143C VAL MATIC 201
AIR/VACUUM VALVE 2-INCH		APCO 145C VAL MATIC 202
ANGLE METER STOPS 1-INCH	1" Bronze Angle Meter Stop (Ball Valve) with 90 Degree Lock Wing, Flare x Outlet Swivel Meter Nut	Ford BA23-444W Jones J1964W Mueller B-24255
ANGLE METER STOPS 2-INCH	2" Bronze Angle Meter Stop (Ball Valve) with 90 Degree Lock Wing, Flare x Outlet Meter Flange	Ford BFA23-777W Jones J1973W Mueller B-24277
BACKFLOW PREVENTER (R.P.)	Reduced Pressure Principal Type Assemblies; Double Check Valve Detector Assemblies for Fire Sprinkler Systems	List of Approved Backflow Prevention Assemblies by the State of California, Department of Health Services most recent version
CORPORATION STOP, FLARE X MIP	Bronze Flare x MIP Thread Ball Valve (T-Head only) 1"and 2" Full Opening	Ford FB700, Jones 1929, Mueller B-25025
CORPORATION STOP, MIP X MIP	Bronze MIP x MIP Thread Ball Valve (T-Head only), 1" and 2" Full Opening	Ford FB500, Jones J-1943 Mueller B-2969 (2") Mueller B-20013 (1")
BOLTS AND NUTS, 304 SS	Hex-Head Machine, ASTM A193, Grade B8 Bolts and ASTM A194, Grade 8 Nuts	
BOLTS AND NUTS, 316 SS	Hex-Head Machine, ASTM A193, Grade B8M Bolts and ASTM A194, Grade 8M Nuts	
BOLTS AND NUTS, A307	Hex-Head Machine, Cadmium/Zinc Plated, ASTM A307, Grade A Bolts and A307 2H Heavy Hex Nuts	
BONDING AGENT, EPOXY	Epoxy Resin Based Bonding Agent for Bonding New Mortar or Concrete to existing concrete	Sika Sikadur 32 Hi-Mod
BUSHING, INSULATING	Nylon, 1-1/4" x 1", 1-1/2" x 1", 2-1/2" x 2"	Calpico Corrosion Control Products F.H.Mahoney
CASING END SEAL	1/4" Thick Styrene Butadiene Rubber Sheet End Seal. Use 1" Wide Stainless Steel Bands. Zippered End Seals with Stainless Steel Bands may also be used.	Advanced Products & Sys. Cascade Calpico Pipeline Seal & Insulator Powerseal Raychem
CASING SPACER	Stainless Steel Casing Spacer, Center Restrained, Position Type with PVC Liner and Non-metallic Anti-friction Runners	Advanced Products & Sys. Cascade Calpico Pipeline Seal & Insulator Powerseal Raychem
CATHODIC TEST STATION BOX	25.4 Kg (54 lbs) Concrete Body with 5.4 Kg (12 lb) Ductile Iron Lid and Lid Ring. "CP TEST" shall be cast into the Lid in 25mm (1") Letters. For Cathodic Protection Test Stations, Anode Ground Beds and Insulated Flange Test Stations.	Christy G5
CATHODIC WELDING CHLORINE	For Welding Cathodic Bond Wires to Steel Pipelines Liquid (Gas) or Sodium Hypochlorite Solution. See Section 15040	Caldweld
COATING, MASTIC	Cold applied Coal Tar or Epoxy based single component, self-priming, heavy-duty protective exterior coating for buried concrete	Carboline Bitumastic 50 Devoe Devtar 5A Polykem 938 Tnemec HB Tnemecol 46-465, HB Tneme-Tar 46H-413
COATING, WATERPROOF	Epoxy Resin Based Cementitious Trowel Grade protective waterproofing for concrete	Sika Top Seal 107 STO CR 241

APPENDIX "C"

CARLSBAD MUNICIPAL WATER DISTRICT'S APPROVED MATERIALS LIST FOR USE ON CONSTRUCTION OF POTABLE AND RECYCLED WATER FACILITIES

Item	Description	Manufacturer/Model
COUPLING, C900 PVC DEFLECTION	4" through 12" Solid PVC for obtaining deflection only. Provides 5 degree maximum deflection	Certainteed Vinyl Iron HD
COUPLING, C900 PVC CLOSURE OR REPAIR	4" through 12" Solid PVC for closure or repair	Certainteed Vinyl Iron HD
COUPLING, C905 PVC CLOSURE, DEFLECTION OR REPAIR	16" through 36" Solid PVC for Closure, Deflection or Repair	IPEX Nyloplast America Septer
COUPLING, GROOVED	Use for Above Ground DI or Steel Pipe 100mm (4") or larger	Grinnell #7001 Tyler 500 Vitaulic #44, #77
COUPLING, STRAIGHT FLEXIBLE	4" and Larger Steel or Ductile Iron Construction, Slip x Slip, Epoxy Coated with 304 or 316 Stainless Steel Bolts and Nuts. For use on AC, PVC, DI, or Steel Pipe	APAC 301 Ford FC1 Powerseal 3501, 3538 Romac 501 Smith-Blair 411
COUPLING, TRANSITION FLEXIBLE	4" and Larger, Steel or Ductile Iron Construction, Slip x Slip, Epoxy Coated with 304 or 316 Stainless Steel Bolts and Nuts. For use on AC PVC, DI or Steel Pipe	APAC 311, 313 Baker Ford FC2A Powerseal 3501, 3538 Romac 501 Smith-Blair 413 Mueller Maxifit
CUSTOMER SIDE SHUT-OFF VALVE	3/4" and 1" Bronze Customer Shut-off (Ball Valve), Inlet Swivel Meter Nut x Outlet FIP Thread, Lockable Tabs, with Lever Handle	Ford B13-332W w/HT34 B13-444W w/HT34 Jones J-1908W Mueller B-24351
CUSTOMER SIDE SHUT-OFF VALVE	2" Bronze Customer Shut-off (Ball Valve), Inlet Meter Flange x Outlet FIP Thread, Lockable Tabs, with Lever Handle	BF13-777W w/HB-67S Jones J-1913W Mueller B-24337
ELL, BURY, DUCTILE IRON	6" Ductile Iron Bury Ells, Long Radius, Flg x MJ/PO (Use of Short Radius Bury Ells with District Engineer Approval Only)	Clow South Bay Foundry
EPOXY ADHESIVE	High-Modulus, Low Viscosity, Epoxy Resin Based Adhesive suitable for Grouting Bolts or Dowels	Sika Sikadur 31, Sikadur 35
EXPANSION JOINT	For Water Pipeline Bridge Crossings	APAC 703 Dresser 63 Powrseal 3563 Smith-Blair 611, 612
FIRE HYDRANT SPOOL, DUCTILE OR CAST IRON, FLANGED	Ductile or Cast Iron Spool with Integrally Cast Flanges and Machined or Cast Exterior Grooves. Spools 12" or longer shall have grooves 3" from each Flange. Spools shorter than 2" shall have one groove centered between the Flanges. Grooves shall be 3/16" deep, $\pm 1/16"$ and 1/4" wide, $\pm 1/16"$, 6 Holed	
FIRE HYDRANT	6" Standard 150 PSI Wet Barrel Bronze Fire Hydrants with Six-Hole Bolt Pattern.	Clow 2050, 2065 Jones J3700, J3775
FIRE HYDRANT, 200 PSI or Higher	Project Specification Submittal Required	
FITTING, DUCTILE IRON	Flanged, Mechanical, Joint or Push-on Tees, Bends, Crosses, Recucers, Adapters, etc., for Water Lines 4" and larger. Manufactured per AWWA C100, C111, C153. Double Cement Mortar Lined. (SSB Fittings will not be permitted on C905 Pipe.)	Bachman Griffin Nappco/Sigma Pipeline Components Star Tyler
FITTING, GROOVED	Grooved ductile Iron Fittings for Grooved end Pipes, 4" through 24"	Grinnell TylerG-B Vitaulic

APPENDIX "C"

CARLSBAD MUNICIPAL WATER DISTRICT'S APPROVED MATERIALS LIST FOR USE ON CONSTRUCTION OF POTABLE AND RECYCLED WATER FACILITIES

Item	Description	Manufacturer/Model
GASKET	1/8" Thick Full Face or Ring, Aramid Fiber Bound with Nitrile. No Asbestos Content	Calpico Garlock 3000 Johns-Manville Klinger 4401 Tripac 5000
GASKET, JOINT RESTRAINT	Rubber Ring Type with Stainless Steel Locking Segments Vulcanized into the Gasket. For use on PVC Carrier and Casing Pipes.	US Pipe Field Lok 350
GASKET, RUBBER GASOLINE RESISTANT	Gasoline Resistant Pipe Gaskets for Water Mains	Newby
GASKET, RUBBER RING	3mm (1/8") Thick, Rubber Ring Type, 1.72 Mpa (250 PSI) Maximum. For 100mm (4") through 900mm (36" Pipe Flanges	Calpico Johns-Manville US Pipe
GREASE	For Bolt Corrosion Protection on Buried Bolts, NO-OX-ID Type	Sanchem NO-OX-ID Dearborn Chemical
GROUT	Non-Shrink Cement Based Construction Grout for Crack Repair, Flooring Mortar, Dowel Grouting, Crack Sealing and General Binding	Sika SikagROUT 212 STO Epoxy Binder CR633 STO Epoxy Gel CR635 STO N-S Grout CR732
JOINT RESTRAINT ASSEMBLY	Only where Concrete Thrust Restraint is not possible. Prior approval of District Engineer is required	
JOINT SEALING COMPOUND, PLASTIC ROPE	For use on Pre-cast Vault and Manhole in Grooved Joints between sections	Quickset Joint Sealing Compound
LUBRICANT, PIPE GASKET	Rubber Gasket Pipe Lubricant for use on PVC or ductile Iron Pipe Joints, NSF Listing required.	Whitlam Blue Lube
METER	Supplied by CMWD	
METER BOX 1" SERVICE	12" x 20" x 12" Polymer Meter Box and Cover for 1" Water Services with meters 1" or smaller. Cover color: Gray for Potable Water Use Purple Lids for Recycled Water Use	Amorcast A6000485 Cover A6000484 Lid, Drop In A6000487
METER BOX 2" SERVICE	17" x 30" x 12" Polymer Meter box with 2-Piece Lid for 2" Water Services with meter larger than 1" and Blowoff Assemblies Cover Color: Gray for Potable Water Use Purple Lids for Recycled Water Use	Amorcast A6001640PC-12 Cover A6001643 Lid, Drop In A6000482
METER BOX 1" SERVICE (Exposed to Traffic Loads)	Gray for Potable Water Use Purple Lids for Recycled Water Use	Brooks Model No.37 with Traffic Rated Lid
METER BOX 2" SERVICE (Exposed to Traffic Loads & for Combination Air Release, Std Dwg W7)	Gray for Potable Water Use Purple Lids for Recycled Water Use	Brooks Model No.66 with Traffic Rated Lid
METER FLANGE	Bronze Meter Flanges for 1-1/2" and 2" Meters with Slotted Holes	Ford CF Series Jones J129 A.Y.McDonald 610F
MORTAR, REPAIR	Two Component, Low Shrinkage, Cement Based with High Compressive and Bonding Strength	Sika Sika Top 122, 123 STO CR 735, CR 740
PAINT	Valve Box Lids Prime Coat required on all above ground metal surfaces	Frazer Traffic Line and Marking Paint Yellow #5020301 (2 coats)
PAINT	Fire Hydrants Prime Coat required on all above ground metal surfaces	Frazer Aero Plate II, Bright Yellow #6480462 (2 coats)
PAINT	Backflow Assys & Vent Pipes, Prime Coat required on all above ground metal surfaces	Rust-Oleum No 7671 Dunes Tan (2 coats)
PAINT, PRIME COAT	Prime Coat, Prime Coat required on all above ground metal surfaces	Rust-Oleum No 769 Damp Proof Red or Rust-Oleum No 865 Enamel-Dunes Tan

APPENDIX "C"

CARLSBAD MUNICIPAL WATER DISTRICT'S APPROVED MATERIALS LIST FOR USE ON CONSTRUCTION OF POTABLE AND RECYCLED WATER FACILITIES

Item	Description	Manufacturer/Model
PIPE, COPPER TUBING	1" Type K Soft Seamless rolled Tubing 2" Type K Soft Seamless Straight Lengths 1" and 2" Type K Rigid Seamless Straight Lengths	Cerro Halstead Lee Mueller Phelps-Dodge
PIPE, DUCTILE IRON	For Water Lines 100mm (4") and larger manufactured per AWWA C111 C115, C150, C151. Double Cement Mortar Lined	American Pipe Griffin Pacific States U.S. Pipe
PIPE, PVC C900	For Water Lines 4" through 12" and 8" Gate Wells. AWWA C900 Class 200 only.	Certainteed Diamond Plastics Extrusion Technologies IPEX Pacific Western VinylTech
PIPE, PVC C905	For Water Lines 16" and 20" through 36". AWWA C905 DR 25 and DR 18	Certainteed Extrusion Technologies IPEX J-M Pacific Western Vinyltech
PIPE, STEEL CEMENT MORTAR LINED AND COATED (CML+C)	Steel Cylinder (CML/C), Per AWWA M11 and Section 15061. 1/4" Minimum Wall Thickness. Steel Pipes Used for Recycled Water Installation are to be identified per District requirements. Submittal required.	
PLASTIC ENCASEMENT	12-mil Thick Polyethylene Encasement Sleeve for Ductile Iron Pipe (DIP) per AWWA C105 and Recycled PVC, CMC/L, or DIP Non-Purple Water Pipe. Clear Sleeve for Potable Water Purple Color for Recycled Water	
PLASTIC WRAP	8-mil Thick Polyethylene Encasement for Buried Fittings and Valves -- Double Wrap Clear Sleeve for Potable Water Purple Color for Recycled Water	
PRIMER, WAX TAPE	Surface Primer for Underground Application of Petrolatum Wax Tape	Carboline Denso Paste Trenton Tem-Coat
PROTECTOR POST, STEEL	4" Diameter, 0.250" Wall Galvanized A-120 Steel Pipe, Concrete Filled	
SEALANT	Chemical Grout for Joint Sealing	3M Scotch Seal
SERVICE SADDLE FOR ACP AND DI PIPE	Cast Brass ASTM B62 Body with Silicone Bronze Double Straps, IP Outlet Sizes 25mm (1") and 50mm (2")	Ford 202B Jones J-979 Smith-Blair 323 Romac 202B Mueller BR2B
SERVICE SADDLE FOR PVC C900 PIPE	Bronze or Brass Saddle with Stainless Steel Four Bolt Strap(s), IP Thread Outlet for Sizes 1" and 2" for Pipe Sizes 4" through 12"	Ford202BS Jones J-969 Smith-Blair 393 Romac 202BS Mueller BR2S
SERVICE SADDLE FOR PVC C905 PIPE	Bronze or Brass Saddle with Stainless Steel Four Bolt Strap(s), IP Thread Outlet for Sizes 1" and 2" for Pipe Sizes 16" and Larger.	Ford 202BS Jones J-969 Romac 202B Mueller BR2S
TAG, BRASS IDENTIFICATION	1" Diameter, 18 Gauge Brass with 3/16" Die Stamped Letters and Numbers, Suitable for Attachment to Cathodic Protection Wires by means of a Nylon Zip Tie.	Ford 202BS Jones J-969 Romac 202N
TAPE, OUTER WRAP	Adhesive Plastic Outer Wrap for Wax Petrolatum Tape in Underground Applications	Polyken 960 Trenton Polyply
TAPE, UTILITY	10 to 50 Mil x 2" Wide General Utility Tape for Corrosion Protection of Above and Below Ground Pipes and Fittings	Calpico Northtown Polyken 900 Scotchwrap 3M 50, 51

APPENDIX "C"

CARLSBAD MUNICIPAL WATER DISTRICT'S APPROVED MATERIALS LIST FOR USE ON CONSTRUCTION OF POTABLE AND RECYCLED WATER FACILITIES

Item	Description	Manufacturer/Model
TAPE, WARNING/ IDENTIFICATION	6" Wide, Warning/Identification (Non-Metallic) Marking Tape for Buried Facilities with Continuous Warning "Caution Water Main Buried Below" or "Caution Recycled Water Main Buried Below" Tape for Recycled Water shall be Purple	Calpico, Type 1 Line-Tec, Type B T.Christy Eng., Type 1 Terra Tape, Standard 250 Thor, Elast Tec Northtown
TAPE WARNING/ IDENTIFICATION FOR RECYCLED IRRIGATION	3" Wide, Warning/Identification (Non-Metallic) Marking Tape for Buried Irrigation Pipelines. Purple Color with Continuous warning "Caution Reclaimed Water Main Buried Below"	Calpico, Type 1 Line-Tec, Type B T.Christy Eng., Type 1 Terra Tape, Standard 250 Thor, Elast Tec Northtown
TAPE, WAX ABOVEGROUND	Petrolatum Saturated Synthetic Fabric Tape for use on Aboveground Couplings, Flanges, Fittings, etc.	Trenton #1 Wax-Tape
TAPE, WAX UNDERGROUND	Petrolatum Saturated Synthetic Fabric Tape for use on Underground Couplings, Flanges, Fittings, etc. Primer and Outer Wrap Required.	Carboline Densyl Tape Trenton #2 Wax-Tape
TAPPING SLEEVE FOR ACP, AND DIP	Fabricated Steel Tapping Sleeve for 4" through 12" Wet Taps. Epoxy Coated with Stainless Steel Bolts and Nuts	Baker 428 Series Ford FTSC Romac FTS-420 Smith-Blair 622
TAPPING SLEEVE FOR PVC (C900 -C905)	Fabricated Steel Tapping Sleeve for 4" through 12" Wet Taps. Epoxy Coated with Stainless Steel Bolts and Nuts	Ford 'FAST' W/S.S. FLANGE Romac SST W/S.S. FLANGE Mueller H304 w/S.S. FLANGE
VALVE STEM EXTENSION, FIBERGLASS	Three Part Fiberglass Valve Extension Kit. Use when extension 8 foot or shorter.	Pipeline Products FPU-210, FPT-200, FPL-220
VALVE STEM EXTENSION, STEEL	Round or Square 1-1/2" Diameter Steel Rod, Welded Construction, Hot Dipped galvanized with Top Centering Ring and AWWA 2" Operating Nuts Top and bottom. Use when extension longer than 8 foot.	Pipeline Products SX-900 South Bay Foundry E4160
VALVE, BALL WITH LOCKING TABS	3/4"Bronze, Straight, FIP x Meter Swivel with Locking Tabs and Purple Handle	1" Ford B13-444w 1" Jones J1908 2" Ford BF13-777W 2" Jones J1913
VALVE, BUTTERFLY 150 PSI	18" and Larger, AWWA C504, Class B. Thermosetting or Fusion Bonded Epoxy coated and Lined. Class D or E Flange x Flange Ends	Dezurik AWWA M&H 1450, 4500 Mueller Linesseal III Pratt Groundhog
VALVE, BUTTERFLY 250 PSI	18" and Larger, AWWA C504, Class B. Thermosetting or Fusion Bonded Epoxy coated and Lined. Class D or E Flange x Flange Ends	Dezurik BAW 250 M&H 1450, 4500 (Class 250) Mueller Linesseal XP 250 Pratt Triton HP-250
VALVE, GATE, RESILIENT WEDGE (RWGV)	4" through 16", non-rising Low Zinc Bronze or Stainless Steel Stern, Ductile Body and Bonnet, encapsulated Wedge per AWWA C509 or C515 with Epoxy Coated Interior. Manufactured to AWWA C509 or C515, with 250 PSI Rating *Ductile Iron Bodies and Bonnets are required	American FC, Series 2500 AVK 25 Clow F6100, F6100 Ductile Kennedy Ken-Seal ii, KRSR Mueller 2361 M&H 4067, 7067, A2361 U.S. Pipe Metroseal & Metroseal 250
VALVE, PRESSURE RELIEF AND SUSTAINING		Cla-Val
VALVE, HANDLE BALL, 150 PSI	3/4" Through 2", Used as part of meter assembly and provided by CMWD	Jones 3/4" J-1098 Jones 1" J-1908, 2" J-1913 Ford 3/4" B13-332W Ford 1" B13-444W Ford 2" B13-777W
VALVE BOX RECYCLED WATER VALVES	Lid to be marked "Recycled Water", See Standard Dwg W13	South Bay Foundry SBF 1208-N

APPENDIX "C"

CARLSBAD MUNICIPAL WATER DISTRICT'S APPROVED MATERIALS LIST FOR USE ON CONSTRUCTION OF POTABLE AND RECYCLED WATER FACILITIES

Item	Description	Manufacturer/Model
VALVE BOX	For Gate Valves & Butterfly Valves, See Standard Dwg W13, Lids shall be marked "Water"	Brooks Service 4TT J&R 4T
VALVE BOX	Normally Close Valve, Lids shall be marked "Water"	Brooks Service 3RT
VALVE BOX	1" Blow Off or Manual Air Releases. See Standard Dwg W5, Lids shall be marked "Water"	Brooks Service 4TT J&R 4T
VALVE BOX	2" Blow Off or Manual Air Release. See Standard Dwg W6 Lids shall be marked "Water"	South Bay Foundary SBF 1243
VALVE BOX	4" Blow Off Assembly. See Standard Dwg W11	South Bay Foundary SBF 1243 (for 4" Pipe Outlet) and Brooks 4TT or J&R 4T (for Valve)
VALVE BOX	Air-Vacuum Valve Assembly. See Standard Dwg W7 Valve Boxes Located in traffic shall use approved manufacturer's Traffic Rated Lids	Amorcast A600 1640 PC-12 w/#60001643*Service 5 Cover Brooks 66 (2-piece lid) J&R No W6B (2-piece lid)

APPENDIX "D"

RECYCLED WATER FORMS